



Acute Disseminated Encephalomyelitis (ADEM)

Last Updated: October 1, 2018



Figure 1: Sagittal STIR (top row left), sagittal T1 post-contrast fat-saturated (FS) (top row right), and axial T2 images of the thoracic

spine demonstrate an expansile, T2/STIR hyperintense, intramedullary lesion with patchy enhancement in the thoracic spinal cord. The features are non-specific and the differential diagnosis includes both intramedullary neoplasm and demyelinating disease. However, with the given history of recent viral illness and clinical resolution following the treatment with steroids, the findings were most compatible with ADEM.

Clinical Features

- Peak Age: Childhood (5-8)
- Gender: M > F (1:0.6-0.8)
- Etiology: Post-infectious or post-vaccination immune-mediated demyelination

Imaging

- General:
 - Location:
 - Brain/Brain stem: Multifocal subcortical/juxtacortical white matter lesions (commonly involves gray matter too), less common periventricular and calloseseptal white matter lesions. Commonly basal ganglia and thalami involved (symmetric)
 - Spinal Cord:
 - Dorsal cord white matter
 - +/- gray matter
 - Nerves: +/- cranial nerve involvement
 - General Appearance:
 - Flame-shaped lesions in spinal cord
- Modality-Specific (Spinal Cord Only):
 - CT Myelography:
 - Spinal cord not well evaluated. May see spinal cord

swelling in acute phase (mimics intramedullary tumor)

- MRI:
 - T1: Isointense or hypointense
 - T1 + Contrast: +/- Enhancement. Patchy, ring, nodular, or cloud-like/fluffy
 - T2: Flame-shaped hyperintense lesions
 - STIR: Flame-shaped hyperintense lesions. Increased sensitivity for detection of lesions
 - DWI: Acute lesions may have restricted diffusion

For more information, please see the corresponding chapter in [Radiopaedia](#), and the [Acute Disseminated Encephalomyelitis](#) chapter in the [Cranial Disorders](#) sub-volume of the Neurosurgical Atlas.

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References

“Diffusion-Weighted Imaging and Proton MR Spectroscopy in the Characterization of Acute Disseminated Encephalomyelitis. - PubMed - NCBI.” Accessed February 7, 2018. <https://www.ncbi.nlm.nih.gov/pubmed?term=17131116>.

MD, Jeffrey S. Ross, and Kevin R. Moore MD. *Diagnostic Imaging: Spine*, 3e. 3 edition. Philadelphia: Elsevier, 2015.

“Medline ® Abstracts for References 5,18 of ‘Acute Disseminated Encephalomyelitis in Adults’ - UpToDate.” Accessed February 7, 2018. <https://www.uptodate.com/contents/acute-disseminated-encephalomyelitis-in-adults/abstract/5,18>.

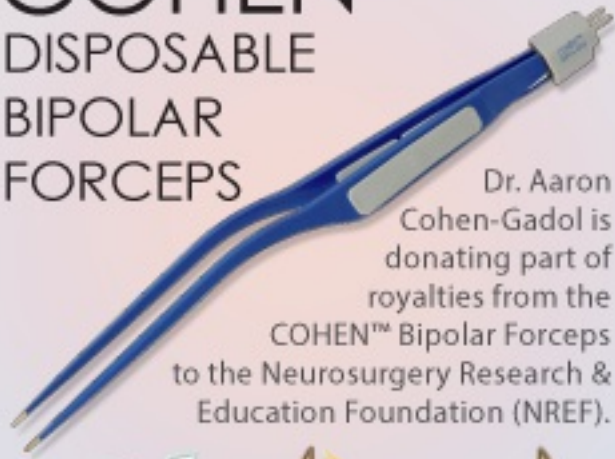
Singh, S., M. Alexander, and I. P. Korah. "Acute Disseminated Encephalomyelitis: MR Imaging Features." *AJR. American Journal of Roentgenology* 173, no. 4 (October 1999): 1101–7. <https://doi.org/10.2214/ajr.173.4.10511187>.

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